Request for Economic Stimulus Funds
<u>Concept</u> <u>Proposal</u>

Submitters:

E-Health Sub-Committee

Remote Hosting Services Workgroup (Ted Kalbfleisch)

Project Title:

Creation of data centers to provide administrative and disaster and recovery support for rural/remote physician EHR systems. To develop broadband capability for transmission of high information content data between medical centers, data centers and rural health clinics.

Project Partners:

 All Kentucky Colleges and Universities with data centers are capable of creating virtual servers, and providing systems administration/database administration support. They have associations with local health clinics. The Kentucky Biomedical Research Infrastructure Network supported by the state's IDeA-INBRE program has well-established connections to the academic centers and through them some rural health clinics.

Project Background & Purpose:

The foundation of the electronic health record (EHR) is the electronic medical record (EMR), and e-prescribing systems implemented within an individual medical practice. These are very complex systems that require significant information technology domain expertise for support, maintenance, and growth. This expertise is often either cost prohibitive, or otherwise unavailable to physicians either with small practices, or in rural/remote areas. Inability to access this expertise creates a formidable barrier to the adoption of the EMR by many physicians in the state. By providing centralized data centers that are staffed by systems administrators and database administrators, it will be possible for these practices to realize the economic benefit of scale by implementing their electronic medical records on virtual servers within centralized, regionally located data centers. This centralized deployment creates a much more robust environment for the EMR that will include the implementation of disaster and recovery plans, system maintenance (both servers and software systems) that will allow each system to be a robust component of more comprehensive health information network providing both better health services to the patient as well a system from which data and samples may be collected to support cutting edge medical research within the state. To provide two-way communication of information, data with utility for physicians in rural communities would be transmitted from metropolitan health centers and hospitals. Increased bandwidth for such information transmission would be required.

Expected Benefits:

1. Enhanced recruitment and retention of physicians in rural and underserved areas. The positive impact is likely to be the greatest for primary care physicians since they are less likely to be able to employ the technical specialists needed and absorb additional costs.

2. Enhanced disaster recovery capabilities because highly qualified technical specialists are more likely to perform well in this area.

3. Better integration with other EHR systems and improved data sharing capabilities, again, due to the presence of more highly qualified technical specialists.

4. Regional centralization (as opposed to statewide centralization) would lead to closer collaboration between the data centers, the physicians, and the hospitals; thereby, resulting in higher quality

EHR-related outcomes (both technical and medical)

<u>Project Description:</u>

Goal: The goal of this project is to develop the infrastructure, and service support network to support centralized installations of EMRs and e-prescribing systems. These systems will all be implemented and maintained as independent, autonomous units under the direction and control of the practices that own them. These systems, although autonomous are each capable of interoperation such that they may be utilized for the construction of patient centric EHRs, or otherwise utilized in medical surveillance programs conducted by authorized entities. These IT support services will provide a necessary complement the extension agent program. The extension agents will be able to work with the physicians directly to provide health information technology support for the selection, and use of EMRs and e-prescribing systems. The service support provided by these centers would be of a more basic IT nature with respect to account management, systems administration, database administration and disaster and recovery services.
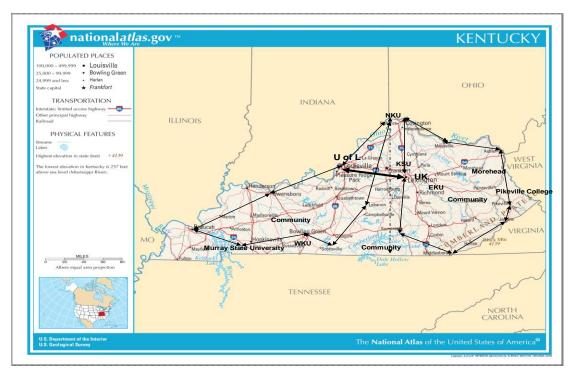
Implementation Strategy:

In order for remote data centers to support independent medical practices, several critical pieces of infrastructure must be in place.

1) **The data centers themselves:** We must identify data centers throughout the state that are capable of hosting the servers (or virtual servers) on which the independent EMRs and e-prescribing systems will be deployed. These data centers can, in many cases be found at the many colleges and universities throughout the state as they are already maintaining the large, enterprise class data and process management systems which support the financial and academic operations within the schools. Funds may be necessary to expand these centers, or otherwise augment them to provide the both basic, and disaster and recovery support in accordance with health information technology best practices

2) **Broadband access for physician's offices:** In order for a remote implementation to be effective, each physician office must have access to sufficient internet band width such that data exchanges between client and server applications are rapid enough to respond to the health care workers in a timely fashion. The service must be sufficiently reliable and robust that the physician will have the confidence necessary to use the EMR as their primary mechanism for recording patient data. Moreover, if physicians can receive data with high information content from metropolitan hospitals and related to their patients, such as x-rays and MRIs, they would more likely find the utility of the system. By virtue of the systems supporting the metropolitan centers, and remote physicians being interoperable and able to easily exchange large volumes of patient data, we are facilitating the collaboration and interaction of remote primary care physicians with the metropolitan medical centers. This will make it possible for physicians to provide easier access to cutting edge specialists and treatments, and will ultimately provide the patient with higher quality of medical care.

3) **Health information technology extension services:** The principal aim of these centralized data centers is to provide reliable, cost effective information technology (IT) support to the remote medical practices that otherwise would not have access to these services (see figure below). They are not, however, domain experts in health or medical informatics. The health information extension agents would provide this expertise, and as such would work with the remote data centers as a team to provide the comprehensive support services necessary for these systems to serve as the informational nerve centers of these medical practices. By virtue of these data centers being remote to the physician, direct, face-to-face access would be logistically difficult. This face-to-face contact will be occasionally necessary in order bolster the confidence of physician and their staff in these systems and the support services. The extension agents would be the ideal emissaries for the one on one interactions necessary to develop both confidence and comfort with these systems.

Figure: Three levels of communication presently exist. The academic centers have T2 capability but would need to purchase additional bandwidth for transmission of data with high information content. The rural health communities have less accessibility to some level of broadband but again may need to purchase a higher level of capability in order to receive data from the regional academic centers and more directly from the metropolitan health centers.

Project Team (Project Manager(s), Content Experts, Instructional Designers, etc**.**):

To be named

Project Budget & Amount of Economic Stimulus Funds Requested**:**

The budget in this project will be developed to support both construction and IT admin personnel to maintain the services.

I am going to be speaking with our IT department at UofL, but costs for augmenting existing data centers to support these activities may be in the range of 1M per center with up to 10 centers.

Admin personnel would probably require salaries on the order of $100k per individual. It is not clear to what degree these individuals **c**an be shared within the datacenter

The development of the internet infrastructure to allow for the exchange of high content data.. Glynn Mangold has provided some preliminary numbers with respect to the number of practices that have broadband access or greater (91% have it). We need to do more research to get better numbers with respect to how many connections need to be made, and how much each would cost.

~$10 M in construction and hardware costs to improve max 300k/data center for the personnel to manage these remote servers. Internet connectivity may be needed, but could be on the order of millions to establish.